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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/832,867	04/12/2001	Shunpei Yamazaki	740756-2294	1394

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EXAMINER	
LEWIS, MONICA	
ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 09/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No.	Applicant(s)	
	09/832,867	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Monica Lewis	2822	

-- The MAILING DATE f this communication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13 and 14* is/are rejected.

7)☒ Claim(s) *11 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2 and5-7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This action is in response to the application filed April 12, 2001.

Drawings

2. The drawings are objected to because there are no figures labeled (See Drawings of Chemical Formula 1-3). Additionally, it does not appear that it is discussed in the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by the following: a) "and one of a silicon nitride film and a silicon oxynitride films" (See Claims 9 and 10); and b) "on the one of the silicon nitride film and a silicon oxynitride films" (See Claims 11 and 12).

Claim Objections

5. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a

dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

6. Applicant is advised that should claims 1, 3, 5, 7, 9, 11 and 13 be found allowable, claims 2, 4, 6, 8, 10, 12 and 14 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Specification

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

8. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as obvious over Takemura (U.S. Patent No. 5,534,716) in view of Toshiba (Japanese Application No. 7-72675).

In regards to claims 1 and 2, Takemura discloses the following:

a) a channel forming region (117) (See Figure 4e);

b) an n-type impurity region (118) adjacent to the channel forming region (See Figure 4e);

c) an n-type impurity region adjacent to the n-type impurity region (118 and 119) (See Figure 4e);

d) an n-type impurity region adjacent to the n-type impurity region (119) (See Figure 4e);

e) a gate insulating layer (120) provided over the active layer (See Figure 4f);

f) a gate electrode (122-126) provided over the gate insulating layer (See Figure 4f);

g) a first gate electrode provided over the gate insulating layer (See Figure 4f);

h) a second gate electrode provided over the first gate (See Figure 4f);

i) first gate electrode overlaps the channel forming region and the n type impurity region (See Figure 4f); and

j) the second gate electrode overlaps the channel forming region (See Figure 4f).

In regards to claims 1 and 2, Takemura fails to disclose the following:

a) gate insulating layer therebetween.

However, Toshiba discloses the use of a gate insulating layer (See Page 2 Lines 1-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takemura to include a gate insulating layer therebetween as disclosed in Toshiba because it aids in protecting the device from shortening out.

In regards to claims 3 and 4, Takemura fails to disclose the following:

a) the first gate electrode comprises one of tantalum nitride and titanium nitride, and the second gate electrode comprises tungsten.

However, Toshiba discloses the use of a gate electrode comprising tantalum nitride, titanium nitride, and tungsten (See Page 15 Paragraph 27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takemura to include a gate electrode comprising tantalum nitride, titanium nitride, and tungsten as disclosed in Toshiba because it aids in providing a low contact resistance.

In regards to claims 5 and 6, Takemura fails to disclose the following:

a) the first gate electrode comprises tungsten, and the second gate electrode comprises aluminum.

However, Toshiba discloses the use of a gate electrode comprising tungsten and aluminum (See Page 15 Paragraph 27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Takemura to include a gate electrode comprising tantalum nitride, titanium nitride, and tungsten as disclosed in Toshiba because it aids in providing a low contact resistance.

In regards to claims 7 and 8, Takemura discloses the following:

a) the n-type impurity region includes an n-type impurity element in concentrations from $1x10^{20}$ to $1x10^{21}$ atoms/cm^3, the n-type doped region includes an n-type impurity element in concentrations of from $2x10^{16}$ to $5x10^{19}$atoms/cm^3, and the n-type doped region includes an n-type impurity element in concentrations from $1x10^{16}$ to $5x10^{19}$atoms/cm^3 (See Column 11 Lines 16-23).

Additionally, the applicant has not established the critical nature of concentrations from $1x10^{20}$ to $1x10^{21}$ atoms/cm^3, $2x10^{16}$ to $5x10^{19}$atoms/cm^3, and $1x10^{16}$ to $5x10^{19}$atoms/cm^3. "The law is replete with cases in which the difference between the claimed invention and the prior art

is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claims 9 and 10, Takemura fails to disclose the following:

a) the gate electrode is covered by an insulating film in which a resin film and one of a silicon nitride film and a silicon oxynitride films are laminated.

However, the limitation of "laminated" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claims 13 and 14, Takemura discloses the following:

a) the light emitting device is selected from the group consisting of an EL display, a video camera, a digital camera, a portable computer, a personal computer, a portable telephone, and a car audio stereo (See Column 1 Lines 10-16).

Allowable Subject Matter

11. Claims 11 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

12. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Misawa et al. (U.S. Patent No. 5,341,012) discloses a CMOS device for use with an active matrix panel; b) Konuma et al. (U.S. Patent No. 5,608,251) discloses a thin film semiconductor circuit; c) Takayama et al. (U.S. Patent No. 5,744,822) discloses a semiconductor device having a crystallized layer; d) Nakajima et al. (U.S. Patent No. 5,982,348) discloses an active matrix device; and e) Shimogaichi et al. (European Patent Application EP 0 866 319 A2) discloses a method for making a thin film transistor.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

September 20, 2002

CARL WHITEHEAD, JR.
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